GOVERNMENT OF INDIA

DEPARTMENT OF COMMERCE

REPORT
OF THE
INDIAN TARIFF BOARD
ON THE
PHOSPHATES AND PHOSPHORIC ACID INDUSTRY

PERSONNEL OF THE BOARD.

Sir R. K. SHANMUKHAM CHETTY, K.C.I.E.—President.

Mr. C. C. DESAI, C.I.E., I.C.S.—Member-Secretary.

Dr. NAZIR AHMAD, O.B.E.—Member.

Dr. H. L. DEY, D.Sc. (Lond.)—Member.

Dr. B. K. MADAN, M.A., Ph.D.—Deputy Secretary.

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REPORT ON THE PHOSPHATES AND PHOSPHORIC ACID INDUSTRY

Reference to the Board.

1. The case of phosphoric acid and phosphates was referred to the Tariff Board for examination by the Government of India, Department of Commerce, in their Resolution No. 218-T (55)/45, dated the 3rd November 1945 (Appendix I). The Resolution stated, *inter alia*, that, pending the formulation of a tariff policy appropriate to the post-war needs and conditions of the country and the establishment of permanent machinery for the purpose, Government would set up machinery for investigating claims from industries which had been started or developed in wartime and which were established on sound lines to assistance or protection during the transition period. The phosphoric acid and phosphates industry fell in this class, as it came into existence during the war and had applied for protection to enable it to compete with foreign imports.

Scope of inquiry.

2. In referring these industries to the Board, Government directed that the Board should, after such examination as it may consider necessary, report whether the industry satisfied the following conditions:—

(1) that it is established and conducted on sound business lines; and

(2) (*a*) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance; or

(*b*) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assitsance to the community is not excessive.

Where a claim to protection or assistance is found to be established, *i.e.*, if condition (1) and condition (2) (*a*) or (*b*) are satisfied, the Board will recommend—

(i) whether, at what rate and in respect of what articles, or class or description of articles, a protective duty should be imposed;

(ii) what additional or alternative measures should be taken to protect or assist the industry; and

(iii) for what period, not exceeding three years, the tariff or other measures recommended should remain in force.

Government further directed that in making its recommendations the Board should give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations would affect industries using the articles in respect of which the protection was to be granted. In view of the fact that, with the cessation of hostilities, imports had already started, thereby offering serious competition to such industries, Government further requested the Board to complete the inquiries with all possible expedition and to submit a report as soon as investigation of the claim of each industry was concluded. It was decided by the Board that the inquiry covered by this report should include the following chemicals :–

phosphoric acid
trisodium phosphate
disodium phosphate
monosodium phosphate and
acid calcium phosphate including other salts of the calcium phosphate group.

It would thus be seen that the important group of chemicals, known as superphosphates, which are mainly used as fertilizers, were excluded from the scope of this inquiry.

Method of inquiry.

3. As a first step, the Board issued a communiqué to associations, firms or persons interested either in the manufacture or consumption of phosphoric acid and its sodium and calcium salts as enumerated above. In this communiqué the Board requested interested persons, firms and associations to submit such information as may be available with them with regard to the following items relating to these chemicals :

(1) annual consumption of the commodity in India for three years immediately preceding the war, and for the last three years;

(2) quantity of indigenous production for the same periods as in (1);

(3) quantity of imports for the same periods as in (1);

(4) Pre-war and present cost of production of the indigenous commodities;

(5) pre-war and present landed cost of imported commodities;

(6) what duties are at present levied on these commodities;

(7) difficulties, if any, encountered by the industry;

(8) the exact nature, form and duration of assistance or protection desired;

(9) how long the industry has been in existence, balance sheets of the last five years and general financial position of the company;

(10) prospects of the industry in combating world competition on the expiry of protection; and

(11) any special features of the industry which may call for specific action.

Following this step the Board issued a detailed questionnaire to firms and persons interested in the manufacture of these chemicals and a separate small questionnaire to their chief consumers and asked them to submit their representations and replies by the 31st January 1946. A list of persons to whom this questionnaire was issued will be found in Appendix II. A list of persons and firms who submitted written representations with regard to any of the items dealing with the manufacture, consumption, use, etc., of these chemicals will be found in Appendix III; while the list of persons orally examined by the Board will be found in Appendix IV. The oral examination took place on the 28th February and the 1st March 1946.

History of the industry: Application for protection.

4. Phosphoric acid and its salts were not manufactured in India before the war. Their manufacture started in 1943 when the available supplies ran short. So far as the Board has been able to ascertain, the only factory producing these chemicals is the one belonging to Star Chemicals, Bombay, which came into existence in 1943 at the instance, and with the assistance, of the Chemicals Directorate, Directorate-General of Supply, New Delhi. This factory has supplied its products to the Chief Controller of Purchase (Supply), New Delhi, the North Western Railway, the Bombay, Baroda and Central India Railway, and several civilian consumers such as Tata Airlines and General Motors. The firm has represented that, since the beginning of 1945, there have been fairly heavy imports of these chemicals and it has been almost impossible for it to withstand competition without an adequate measure of protection.

Description of the process.

5. These chemicals form a well connected chain in which the first link is phosphoric acid which in the factory of Star Chemicals is made by the action of sulphuric acid on bonemeal. Bones are obtained locally from slaughter-houses, etc., and are calcinated at a high temperature. When the calcination is complete, the bones are powdered in a disintegrator and sieved through a mesh of 1/16 inch. The residual particles are again put into the disintegrator and sieved. The bone ash obtained in this way contains 82 per cent. to 85 per cent. calcium phosphate. Dilute sulphuric acid is added to the bone ash in a steam jacketed reaction vessel lined with lead. The mixture is agitated until the reaction is complete resulting in the production of dilute phosphoric acid and insoluble calcium phosphate. The latter is separated by means of vacuum filters connected directly to the reaction vessel, while the dilute phosphoric acid recovered from this process is concentrated in lead-lined vessels up to 80 per cent. to 85 per cent. concentration. The acid obtained in this way is decolourised by activated charcoal filter and finally passed in glass containers. If phosphatic rock is available, it may be used instead of bones, the later stages of the process being the same as described above. In the United States of America, large quantities of phosphoric acid are produced without the aid of sulphuric acid, *viz.*, by thermal

process. In this process, elemental phosphorous is first produced by heating tricalcium phosphate in the presence of carbon and silica which, on oxidation and solution in water, yields phosphoric acid. If phosphoric acid and its compounds are to be produced in large quantities in India, it might be necessary to consider the method of production which would avoid the use of sulphuric acid. It would, however, be necessary for this purpose to have supply of electric power at very low rates as the reduction has to be effected at high temperatures which can be achieved satisfactorily only in an electric furnace. It may be mentioned that the yield with the thermal method is about 80 per cent. as against 90 per cent. with the wet method in which sulphuric acid is used.

Uses.

6. These chemicals find numerous uses in industry as shown below :—

Phosphoric acid—
Medicinal purposes.
Manufacture of phosphates and hydrogen peroxide.
Drying agent in the synthesis of dyes and intermediates.
Incandescent light filaments.
Substitutes for tartaric and citric acids in the manufacture of jellies.
Essences and soft drinks.
Pickling and rust-proofing of iron.
Dental cements.
Engraving and lithography.
Coagulation of rubber latex.
Textiles (dyeing cotton and calico printing, brightening the colour of silks).
Manufacture of fertilizers.

Tri-sodium phosphate—
Water softeners.
Boiler compounds.
Proprietary soap powders and cleansers.
Textile industry.
Tanning industry.
Sugar purification.
Photographic developers.
Medicines (mild cathartic).

Di-sodium phosphates—
Chemicals.
Dyes.
Pharmaceuticals.
Fertilizers.
Textiles (weighting silk, dyeing and printing).
Fire-proofing wood and paper.
Ceramic glazes.
Tanning.
Paint pigments.

Di-sodium phosphates—cont.
Baking powder.
Galvanoplastic.
Analytical reagents.
Preservation of cheese.

Mono-sodium phosphates—
Baking powders.
Medicine (to increase the acidity of urine).

Acid calcium phosphate and acid sodium pyro-phosphates—
Baking powder and self-raising flour.

Metallic hypo-phosphites—
Mainly of calcium are of pharmaceutical importance; sodium-meta-phosphate in polymeric form as Graham Salt or sodium hexa-meta-phosphate is being widely used for softening water for domestic and laundry washing and boiler purposes.

It will be seen from a perusal of the above that the uses to which these articles are put can be divided broadly into two classes, *viz.*, (1) uses for external purposes and (2) uses for internal purposes. It is important to bear this distinction in mind inasmuch as the requirements in regard to purity and absence of deleterious ingredients like salts of lead and arsenic are different for the two categories. Whereas the products which are used for internal consumption must be absolutely pure and practically free from lead and arsenic, those required for external use need not be so pure. A firm which claims to manufacture these salts so as to be suitable for internal consumption must have the proper equipment to manufacture them pure.

In an industrially advanced country, phosphates are used in very large quantities as will be seen from the following table which gives the production of salts of phosphoric acid in the United States in 1939 together with their average prices :—

	TONS.	PRICE PER TON.
		$
Tri-sodium phosphate	**114,687**	**42·00**
Di-sodium phosphate	**13,627**	**90·60**
Mono-sodium phosphate	**3,197**	**136·20**
Sodium pyro-phosphate	**42,210**	**99·60**
Sodium meta-phosphate, ammonium phosphate and others—(total value).	..	**4,395,000**

Annual consumption.

7. Since no separate figures for import of these chemicals have been maintained, it is difficult to gauge accurately their annual consumption in the country. In 1944–45, Star Chemicals manufactured 20 tons of phosphoric acid and 50 tons of its salts. This, however, does not represent the total consumption as certain quantities of imported

materials were available and were used along with the locally manufactured products. According to an estimate furnished by the Supply Department, the present consumption of phosphoric acid ranges from 30 tons to 40 tons per annum while future annual requirements of this product are estimated at about 50 tons. Similarly, the present consumption of di-sodium and tri-sodium phosphates is of the order of 120 tons to 150 tons per annum, while the estimated consumption for the next four years is about 250 tons per annum. The demand for hexa-meta-phosphate, tri-sodium phosphate and other proprietary brands has increased recently as the Indian railways have started treatment of boiler-feed waters with these chemicals, and in the shipping programme for 1945 provision was made for importing 180, 110 and 30 tons, respectively of these chemicals. Looking at the numerous uses of these chemicals, it is probable that their consumption in the country will increase, especially if the number of engineering firms increases in the next few years. We, therefore, estimate that the requirements of the country in the next few years will be about 50 tons of phosphoric acid and about 300 tons of the various phosphates excluding super-phosphates.

Imports.

8. Neither does the phosphoric acid nor any of these salts figure separately in the sea-borne trade accounts and therefore it is not possible to give any indication as to the imports of these products either before or during the war.

Domestic production.

9. As stated above, only one Indian factory manufacturing these chemicals applied for protection. It was stated on its behalf that its production capacity is such that, working three shifts per day, it can produce about 1 ton of phosphoric acid and 1 ton of salts per day. This appears to be an over-estimate as it does not take into account the time required for the cleaning of machines. It is clear, however, that even after making due allowance for this factor, the factory has sufficient capacity to meet the requirements of the country in phosphoric acid and its salts, excluding super-phosphates, in the near future.

Lack of statistics.

10. It has been noted above that statistics relating to imports and domestic production of these chemicals are not available. In its report on calcium chloride, the Board has drawn the attention of Government to the desirability of providing adequate machinery for maintaining a complete record of the imports of various articles as well as their production in the country so that these statistics may be available to Government departments and industrial and commercial bodies interested in these industries. The Board would again like to emphasise this point as the absence of reliable statistics in regard to import and domestic production of the items referred to it for examination is found to be a very severe handicap in its work.

We suggest that arrangements should be made for entering these items separately in statistics dealing with the sea-borne trade of India and that a survey of Indian chemical industries should be carried out so as to yield reliable data regarding the production of chemicals in the country.

Quality.

11. It has been stated above that these chemicals may be produced in two different qualities depending upon the degree of purity and the presence of salts of lead and arsenic. When they are required for external purposes, such as, removal of stain and rust, pickling of metals, softening water for boilers, etc., the quality need not be absolutely pure and presence of traces of impurities should not seriously affect the performance of these chemicals. When, on the other hand, they are required for internal consumption, such as medicinal purposes or for making baking powders, they have to be absolutely pure and must not contain more than four parts in a million of salts of lead or arsenic. The evidence produced before the Board by the consumers showed that for all commercial purposes the quality of the products prepared by Star Chemicals was satisfactory. On the other hand, the tests carried out on the acid calcium phosphate produced by the firm showed that it contained lead salts in excess of the standard laid down for internal consumption. The firm stated that it was due to its not being able to obtain stainless steel vessels for the preparation of pure compounds but that it had recently obtained the release orders for the metal and would install the vessels in the near future. The firm was confident that with the installation of reaction vessels made of stainless steel, it would be in a position to manufacture sodium and calcium salts of the required degree of purity. On the basis of the evidence placed before the Board, therefore, it may be stated that, whereas the firm is capable of manufacturing phosphoric acid and its salts in commercial quality, it has not been able in the past to manufacture phosphates of the pure quality, although it hopes to be able to do so as soon as it is in a position to install some new equipment. The manufacturers of baking powder also stated in the oral evidence that the acid calcium phosphate, in addition to containing more lead salt content than was permissible, was also not quite satisfactory in regard to colour and texture. The firm, however, stated that it was at present making experiments with a view to evolving the right type of material required by the baking powder industry and since the samples on which the baking powder industry's report was based formed a part of these experiments they should not be taken as final. The firm gave the assurance that it would be able to supply acid calcium phosphate of the required colour and texture and that the compounds made by it would also conform to the standard as regards the proportion of lead and arsenic salts when it was able to install stainless steel vessels.

Cost of production.

12. The Star Chemicals factory was costed by a Cost Accounts Officer deputed by the Board, who went through the books of the factory and examined figures relating to cost of materials, labour charges, overheads, etc., of a representative period of production. These figures were further scrutinized by the Board in collaboration with the manufacturers with special regard to (1) the correct quantities of raw materials such as bones, sulphuric acid, soda ash, etc., required for the production of these chemicals, and (2) possible economies in labour charges as a result of rationalizing production in the factory.

The figures as finally arrived at by the Board, on the basis of an annual production of 100 tons of phosphoric acid and 150 tons of phosphates, are as follows :—

	Cost per ton. RS.
(a) *Phosphoric acid*—	
Bones 4·8 tons at Rs. 90 per ton	432
Sulphuric acid 2·2 tons at Rs. 160 per ton ..	352
Total cost of raw materials ..	784
Labour	90
Overheads	162
Packing	600
Depreciation on building and plant at statutory rates	32
Interest on working capital	6
Cost of production including packing ..	1,674

(*Or* Rs. 84 per cwt. approximately.)

	Cost per ton. RS.
(b) *Sodium phosphates*—	
Phosphoric acid (prepared at the factory) 0·46 ton at Rs. 793 per ton (*plus* 5 per cent.)	383
Caustic soda 0·16 ton at Rs. 19–8–0 per cwt. ..	62
Soda ash 0·46 ton at Rs. 10 per cwt.	92
Total cost of raw materials ..	537
Labour	86
Overheads	153
Depreciation at statutory rates	32
Interest on working capital	3
Packing	40
Cost of production including packing ..	851

(*Or* Rs. 43 per cwt. approximately.)

	Cost per ton.
	RS.
(c) *Acid calcium phosphate*—	
Phosphoric acid 1·3 tons at Rs. 793 per ton (*plus* 5 per cent.)	1,082
Lime 0·40 ton at Rs. 60 per ton	24
Total cost of raw materials ..	1,106
Labour	60
Overheads	105
Depreciation at statutory rates	32
Interest on working capital	3
Packing	160
Cost of production including packing ..	1,466

(*Or* Rs. 73 per cwt. approximately.)

13. A few words of explanation are necessary in regard to the figures of cost of production given above. The price of bones has been taken at Rs. 90 per ton which is based upon the actual payment made by the factory just before the inquiry. We were informed by Dr. J. N. Ray of the Department of Industries and Supplies that there is a likelihood of the price of bones coming down; on the other hand, the firm stated that the price of bones was rising steadily owing to the export of increasingly large quantities of this material since the termination of war. We have taken the price as actually paid by the factory, but in this connexion we would like to suggest that the question of restricting the export of bones from the country may be considered by Government at an early date as it is a valuable raw material from which phosphoric acid, phosphates and super-phosphates can be prepared in the country, the latter being specially required for increasing the fertility of soil. It may be mentioned here that while 6,000 tons to 7,000 tons of super-phosphates were imported per annum before the war, the exports of bones and bone meal amounted to over 30,000 tons per year, from which over 6,000 tons of phosphates could be prepared. It is understood that plans are now under consideration for manufacturing 400,000 tons of ammonium sulphate to be used as fertilizers. In order that these fertilizers may yield the best results, we are informed that they would require at least 100,000 tons of super-phosphates. If valuable raw materials such as bones and phosphatic rock are allowed to be exported freely out of the country, it may not be possible to manufacture the required quantity of super-phosphates at economic prices, and the vital needs of the country in regard to soil fertility and crop production may suffer badly.

Price of sulphuric acid.

14. We have taken the price of sulphuric acid at Rs. 160 per ton, while the price actually paid by the factory in the past is considerably above this figure. Since, however, imported sulphur is now available at about Rs. 150 per ton, we are of the opinion that pending a detailed enquiry it should be possible for the acid manufacturers to supply sulphuric acid to the various consuming industries at a price not exceeding Rs. 160 per ton. This estimate is based upon the well-known relationship between the price of raw sulphur and sulphuric acid pervailing in other countries, even after allowing a very liberal margin of profit. In this connexion we would like to point out that sulphuric acid enters to such an extent in the manufacture of numerous chemicals that its consumption is often regarded as an index of the industrial development of a country. We, therefore, recommend that Government should take effective steps to see that this important basic chemical is supplied to consuming industries at a reasonable rate so that the industrial development of the country is not handicapped. One way of ensuring the supply of sulphuric acid to the industries at a reasonable price would be to issue import licences for sulphur only to those factories which would be willing to supply sulphuric acid at a fixed rate. If, however, this condition is not fulfilled and the consumers of sulphuric acid, such as manufacturers of phosphoric acid in the present inquiry, are compelled to buy sulphuric acid at higher rates, we suggest that the cost of manufacture of phosphoric acid and its salts should be linked up with the price of sulphuric acid, due allowance being made for the difference between the price allowed by us, *viz.*, Rs. 160 per ton, and the price actually paid by them to the manufacturers of sulphuric acid.

Sodium and calcium salts.

15. Phosphoric acid used for the manufacture of the sodium and calcium salts is produced in the factory itself. Therefore, in calculating the cost of production of these salts, we have taken the cost of raw materials necessary for the manufacture of the required quantities of phosphoric acid. Since, however, the phosphoric acid is produced in a dilute condition and contains some impurities, it has to be purified and concentrated before it can be used in the manufacture of its salts. Therefore, a sum of Rs. 9 per ton has been allowed as the cost of concentration of this acid, while a further allowance of 5 per cent. has been made on account of the impurities present in it. To the cost of phosphoric acid thus arrived at, the cost of other raw materials, labour charges, overheads, depreciation, etc., have been added for working out the cost of manufacture of the sodium and calcium salts. The yield of the salts has been taken at from 75 per cent. to 80 per cent. of the theoretical yield, which is on the low side, but it is expected that, with the application of better quality control methods, higher yield would be obtained in future. The cost of manufacture of tri-sodium

phosphate alone has been worked out, as it was felt that it would give a fair indication of cost for the whole sodium group. Allowance for depreciation has been made at a uniform rate for phosphoric acid and its salts in view of the fact that the factory would be engaged in manufacturing phosphoric acid partly for sale and partly for the production of its salts; and, therefore, in any process, practically the whole of its plant would be employed. Finally, the working capital of the company has been taken at Rs. 25,000 and the interest allowed on it at the rate of 4 per cent. has been allocated to the different items on the basis of their rated production of 100 tons for phosphoric acid and 150 tons for phosphates assumed above.

Fair selling price.

16. We must now work out the fair selling prices of these chemicals based on the cost of manufacture as obtained above. In order to do so, we must add to the cost of manufacture reasonable profits as well as railway freight. The block capital of the factory was stated to be Rs. 75,000. Profit has been allowed on it at the rate of 10 per cent. and has been allocated to the different items on the basis of the rated production of the factory. The products made by the firm in its factory at Bombay are supplied to consumers in all parts of India. In this respect the importing firms have a certain amount of advantage over the Bombay producer, since they can supply the imported products to the consumers from the nearest port of importation, *e.g.*, Calcutta, Bombay, Madras, etc. So far as sodium and acid calcium phosphates are concerned, the railway freights are comparatively small and no allowance has been made for them. The case of phosphoric acid, however, is different since the railway freight for this chemical is rather high, and if no allowance for it were made, the Indian firm at Bombay would stand at a considerable disadvantage as compared with the importing firms. Accordingly, an allowance of Rs. 140 per ton has been made for railway freight, which represents the average of short and long distances from Bombay to the main consuming centres in India. Thus the fair selling prices of these chemicals work out as follows :—

	Per ton. Rs.
Phosphoric acid—	
Cost of manufacture	1,674
Profit	45
Railway freight	140
Fair selling price ..	1,859

(*Or* Rs. 93 per cwt. approximately)

	Per ton.
	Rs.
Sodium salts—	
Cost of manufacture	851
Profit	20
Fair selling price ..	871
(*Or* Rs. 44 per cwt. approximately.)	
Acid calcium phosphate—	
Cost of manufacture	1,466
Profit	20
Fair selling price ..	1,486
(*Or* Rs. 74 per cwt. approximately.)	

Cost of importation.

17. According to a leading firm of importers, the landed costs of these chemicals together with their break-up are as follows :—

(Figures in rupees per cwt.)

	Phosphoric acid.	Sodium phosphates.	Acid calcium phosphate.
C.i.f. price	75·73	45·330	39·66
Clearing charges	0·75	0·725	0·70
Landed cost, ex-duty	76·48	46·055	40·36
Duty	22·52	10·945	9·64
Landed cost	99·00	57·000	50·00

The following table shows the fair selling prices arrived at by us for the manufacture of the chemicals together with their landed costs (1) excluding duty, and (2) including duty at the rate of 30 per cent. for phosphoric acid and 24 per cent. for phosphates :—

(Figures in rupees per cwt.)

	Phosphoric acid.	Sodium phosphates.	Acid calcium phosphate.
Landed cost excluding duty	76·5	46	40
Landed cost including duty	99·0	57	50
Fair selling price	93·0	44	74

Measure of protection.

18. (*a*) *Phosphoric acid.*—It will appear from the above table that the landed cost, ex duty, of phosphoric acid f.o.r. Bombay is Rs. 76-8-0 per cwt. against the fair selling price of Rs. 93 per cwt. With the existing revenue duty of 30 per cent. *ad valorem*, the landed cost including duty comes to Rs. 99 per cwt. which just covers the fair selling price of the Indian manufacturer. The existing rate of duty, therefore, affords adequate protection to the home producer of phosphoric acid. In view, however, of the uncertainty of the recent c.i.f. price quotations, and of the future course of prices, and in order to afford the Indian producer time to expand his production and lay his plant out with an assurance of security against unfair competition from overseas imports, we recommend that the present 30 per cent. *ad valorem* duty on imports of phosphoric acid should be converted into a protective specific duty at an equivalent rate, *i.e.*, at Rs. 23 per cwt. on the basis of the existing c.i.f. price. This duty should be levied and remain in force up to the 31st March 1949. If the c.i.f. price of the imported acids falls below Rs. 70 per cwt., the rate of duty should be adjusted under section 4 (1) of the Indian Tariff Act, 1934, to safeguard the measure of protection recommended by us on the basis of the above fair selling price.

19. (*b*) *Sodium phosphates.*—It has been seen that the c.i.f. price of sodium phosphates is Rs. 45·33 per cwt. in respect of imports from the Unted Kingdom. August this, the fair selling price of these compounds has been estimated by us at Rs. 44 per cwt. The existing rates of duty are 24 per cent. *ad valorem* on imports from the United Kingdom and 36 per cent. on imports from other sources. These rates afford adequate protection against United Kingdom imports on the basis of the present landed cost and fair selling price. It is possible, however, that a larger measure of protection may be necessary in respect of imports from other countries, particularly the United States of America, if the prices of imports from these countries are much lower than the present prices of imports from the United Kingdom. For the reasons mentioned in the preceding paragraph, we recommend that the present *ad valorem* duty on sodium phosphates should be converted into a protective specific duty which works out at Rs. 11 per cwt. on the basis of the existing c.i.f. prices. This duty should remain in force up to the 31st March 1949. If the c.i.f. price of imports from any source declines below Rs. 34 per cwt., we recommend that the rate of duty should be varied under section 4 (1) of the Indian Tariff Act, 1934, so as to maintain the measure of protection recommended by us on the basis of the fair selling price estimated by us.

20. (*c*) *Acid calcium phosphate.*—The landed cost inclusive of duty of this article is Rs. 50 per cwt. against a fair selling price of Rs. 74 per cwt. The existing duty does not therefore afford

adequate protection to the industry. We recommend that a duty of Rs. 34 per cowt. (being the difference between the fair selling price and the landed cost ex duty) should be levied on imports of acid calcium phosphate and that it should remain in force up to the 31st March 1949. Should the c.i.f. price fall below the present level of Rs. 40 per cwt., section 4 (1) of the Indian Tariff Act, 1934, should be used to adjust the rate of duty so as to equalise the landed cost of imports to the fair selling price estimated by us.

Burden of protection.

21. (*a*) *Phosphoric acid.*—It has been found that the present rate of duty of 30 per cent. *ad valorem* gives adequate protection to the manufacturers of this chemical in India, the Board's recommendation merely consisting in converting the existing *ad valorem* revenue duty into a specific protective duty at an equivalent rate for the next three years. The question of burden of protection at an enhanced rate of duty, therefore, does not arise. It may, however, be mentioned that one of the principal uses to which phosphoric acid is put at present in India, is the removal of rust and stains from machinery parts. A leading firm of motor car engineers, which uses this chemical in fairly large quantities, stated that an increase of 4 annas per lb. in the cost of phosphoric acid would bring about an increase of Rs. 2 in the cost of cleaning the parts of a car before assembly; but since this would be only one of many items, it would actually represent a very small fraction of the total cost of doing the job. Similarly, according to another engineering firm which uses this chemical for cleaning parts of old machinery and plant, the cost of phosphoric acid represents but an insignificant portion of the total cost of doing the job. Our estimates of the fair selling prices are based upon the availability of sulphuric acid and bones at certain rates. Even if these raw materials have to be purchased at higher rates as a result of which a higher fair selling price has to be allowed, thereby involving the imposition of an additional protective duty, the extra cost to the consumers of this chemical, especially the engineering firms, would be very small.

(*b*) *Sodium phosphates.*—As in the case of phosphoric acid, we have nearly recommended a conversion of the existing revenue duty into an equivalent protective duty which should afford adequate protection to the Indian manufacturers of sodium phosphates. The question of extra burden on the consumers arising out of protection, therefore, does not arise. The incidence of the protective duty recommended by us amounts to only 1½ annas per lb. which represents a very small proportion of the cost of processes such as tanning, fire-proofing of wood and paper, water softening, etc., in which these salts are used.

(*c*) *Acid calcium phosphate.*—This salt is largely used in making baking powder and self-raising flour. According to the information furnished by a leading firm, the cost of acid calcium phosphate represents roughly 14 cent. of the cost of baking powder. This is undoubtedly an appreciable percentage, but in this connection we were informed that if the price of acid calcium phosphate is Re. 1–2–0 per lb., the cost of the baking powder would work out at Rs. 32–8–0 per case, while the cost of imported powder is Rs. 50 per case. It would, therefore, seem that with the duty recommended by us, there is sufficient margin for the indigenous baking powder industry to compete with foreign imports. If, however, the price of imported baking powder falls below a level at which it becomes uneconomical for the industry to manufacture it in India, its case will have to be examined as a separate issue.

Eligibility for protection.

22. This industry came into being during the war and as such a good deal of machinery and plant had to be fabricated in the country. The firm of Star Chemicals showed enterprise and resourcefulness in setting up the factory in the face of the difficult conditions brought about by the war, and though there is room for further improvement, it succeeded in putting up a plant capable of yielding the acid and its salts of commercial quality. It is also confident that, with the installation of reaction vessels made of stainless steel, it would be in a position to prepare these compounds of the B.P. (pure) quality. In view of the restricted demand in wartime, the production in the factory has been rather small. The firm has also been alive to the necessity of making by-products such as glue for which the necessary equipment is being installed and has agreed to give a credit for a part of the price realized from the sale of glue in order to lower the cost of manufacture of phosphoric acid. Taking into account all these factors, we are satisfied that the industry has been established, and is being conducted on sound business lines and thus satisfies the first condition laid down by Government.

23. Of the raw materials required in the manufacture of phosphoric acid and its salts, bones and sulphuric acid are produced in the country, while soda ash and caustic soda are also available from local manufacture or imports. There is a definite market for phosphoric acid and its sodium and calcium salts and though at present this market is rather small, it is probable that it will expand as the various industries which consume these articles are established in India. The industry, therefore, possesses natural or economic advantages by way of raw materials and potential markets. The costs of manufacture worked out by us are not excessive compared to the cost of imported articles, and even where certain additional duties have been recommended by us, the burden on the consuming industries is, on the whole, small. As regards the likelihood, within a reasonable time, of this industry being developed sufficiently to be able to carry on successfully without protection, it should be pointed out that all would depend mainly upon the cost of the raw materials, especially bones or phosphatic rock, sulphuric acid,

caustic soda and soda ash. If these raw materials are made available to the industry at prices which compare favourably to those ruling in other countries, it may be reasonably expected that the industry would be able to stand on its own legs and carry on successfully without protection. Subject to this limitation, therefore, we are satisfied that the second condition laid down by Government is also fulfilled by the industry.

24. Our recommendations are as follows :—

Recommendations.

(1) The present 30 per cent. *ad valorem* revenue duty should be converted into a specific protective duty at an equivalent rate of Rs. 23 per cwt. on all imports of phosphoric acid. This duty should remain in force up to the 31st March 1949. If the c.i.f. price of any imported phosphoric acid falls below Rs. 70 per cwt., the rate of duty should be adjusted under section 4 (1) of the Indian Tariff Act, 1934, to safeguard the measure of protection recommended by us on the basis of the estimated fair selling price (paragraph 18).

(2) The present *ad valorem* revenue duty on sodium phosphates should be converted into a specific protective duty at the rate of Rs. 11 per cwt. on all imports of sodium phosphates. The duty should remain in force up to the 31st March 1949. If the c.i.f. price of any imports declines below Rs. 34 per cwt., we recommend that the rate of duty should be varied under section 4 (1) of the Indian Tariff Act, 1934, so as to maintain the measure of protection recommended by us on the basis of the fair selling price estimated by us (paragraph 19).

(3) A specific protective duty of Rs. 34 per cwt. should be imposed on all imports of acid calcium phosphate and should remain in force up to the 31st March 1949. Should the c.i.f. price fall below the present level, *i.e.*, Rs. 40 per cwt., section 4 (1) of the Indian Tariff Act, 1934, should be invoked to adjust the rate of duty so as to equalize the landed cost of imports to the fair selling price estimated by us (paragraph 20).

(4) Government should ensure that manufacturers of phosphoric acid and its sodium and calcium salts get sulphuric acid at a rate not exceeding Rs. 160 per ton. If it is not possible to enforce this arrangement, then the duties suggested by us should be so modified as to secure to the manufacturers of phosphoric acid and its salts the measure of protection recommended by us in the light of the prevailing price of the sulphuric acid (paragraph 14).

(5) Manufacturers of phosphoric acid and its salts should be given all facilities for obtaining reaction vessels of stainless steel and other plant and machinery to enable them to prepare these chemicals of commercial as well as pure B.P. quality (paragraph 11).

Acknowledgments.

25. The Board wishes to place on record its thanks to Dr. Madan, the Deputy Secretary, for his assistance throughout the inquiry and to Dr. J. N. Ray of the Department of Industries and Supplies for his helpful co-operation and advice during the stage of oral examination of the witnesses appearing before the Board.

SHANMUKHAM CHETTY,
President.

C. C. DESAI,
Member-Secretary.

NAZIR AHMAD,
Member.

H. L. DEY,
Member.

B. K. MADAN,
Deputy Secretary.

(CAMP) OOTACAMUND, *the 27th May* 1946.

APPENDIX I.

Resolution of the Government of India, Department of Commerce (Tariffs), No. 218-T (55)/45, dated, New Delhi, the 3rd November 1945.

In the statement on industrial policy issued by the Government of India on the 23rd April 1945, it was announced that, pending the formulation of a tariff policy appropriate to the post-war needs and conditions of the country and the establishment of permanent machinery for the purpose, Government would set up machinery for investigating claims from industries, which have been started or developed in wartime and which are established on sound lines, to assistance or protection during the transition period. A press communiqué issued on the same date invited industries to address their claims to the Secretary to the Government of India in the Department of Commerce.

2. Several industries have accordingly applied for assistance or protection, and on a preliminary examination of their claims, the Government of India have come to the conclusion that applications submitted by the following industries call for a detailed examination :—

(i) non-ferrous metals, including antimony ;
(ii) grinding wheels ;
(iii) caustic soda and bleaching powder ;
(iv) sodium thiosulphate, sodium sulphite anhydrous, sodium bisulphite ;
(v) phosphates and phosphoric acid ;
(vi) butter colour, aerated water powder colour ;
(vii) rubber manufactures ;
(viii) fire hose ;
(ix) wood screws ;
(x) steel hoops for baling.

Other applications are under the consideration of Government, and further action in their case will be taken in due course.

3. In addition to the industries which have applied for assistance or protection, there are certain industries the starting of which was considered essential by the Government of India under conditions created by the war. Early in 1940, Government announced that specified industries promoted with their direct encouragement during wartime might feel assured that, if they were conducted on sound business lines, they would, by such measures as Government might devise, be protected against unfair competition from outside India. In accordance with this decision, the following industries have been given an assurance of protection against unfair competition after the war :—

(i) bichromates ;
(ii) steel pipes and tubes up to a nominal bore of 4 inches ;
(iii) aluminium ;
(iv) calcium chloride ;
(v) calcium carbide ;
(vi) starch.

Of these industries, only those engaged in the manufacture of bichromates, calcium chloride and starch have so far applied for assistance or protection during the transition period. The Government of India consider that the applications submitted by these three industries also call for immediate investigation.

4. For the purpose of these and any subsequent investigations, the Government of India have decided to set up a Tariff Board for a period not exceeding two years, in the first instance. The Board will consist of—

PRESIDENT :

Sir R. K. Shunmukham Chetty, K.C.I.E.

MEMBERS :

Mr. C. C. Desai, C.I.E., I.C.S.
Prof. H. L. Dey, D.SC. (Lond.).

The Board will include one more Member whose name will be announced shortly. Mr. Desai will act as Secretary to the Board in addition to his duties as Member.

5. The Tariff Board is requested to undertake, in such order as it thinks fit, the investigation of claims put forward by the industries specified in paragraphs 2 and 3 above. In the case of each industry the Board will, after such examination as it considers necessary, report whether the industry satisfies the following conditions :—

(1) that it is established and conducted on sound business lines ; and

(2) (*a*) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance ; or

(*b*) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive.

Where a claim to protection or assistance is found to be established, *i.e.*, if condition (1) and condition (2) (*a*) or (*b*) are satisfied, the Board will recommend—

(i) whether, at what rate and in respect of what articles, or class or description of articles, a protective duty should be imposed ;

(ii) what additional or alternative measures should be taken to protect or assist the industry ; and

(iii) for what period, not exceeding three years, the tariff or other measures recommended should remain in force.

In making its recommendations the Board will give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations affect industries using the articles in respect of which protection is to be granted. Since relief, to be effective, should be afforded without delay, the Board is requested to complete its enquiries with all possible expedition and to submit a report as soon as the investigation of the claim of each industry is concluded.

6. The headquarters of the Board will be at Bombay, but it will visit such other places as it thinks necessary for purposes of its enquiries. Firms and persons interested in any of these industries, or in industries dependent on the use of the products of these industries, who desire that their views should be considered, should address their representations to the Secretary to the Board.

7. Any claims hereafter received from other industries which in the opinion of the Government of India are suitable for examination by the Board will be referred to the Board in due course for examination.

8. The Government of India trust that Provincial Governments and Administrations will afford the Board all the assistance which it may require and will comply with any request for information which may be addressed to them by it.

N. R. PILLAI,
Secretary.

APPENDIX II.

List of firms to which questionnaire was sent.

Bengal—

(1) New India Chemical and Pharmaceutical Works, 95-1-C, Cossipore Road, Calcutta.

Bombay—

(2) Messrs. Dharamsee Morarjee Chemical Co., Ltd., Ambarnath near Kalyan.

(3) Eastern Chemical Co., Rowle Hill, Sion, Bombay.

(4) Sonawalla Industries, Ltd., Sonawalla Estate, Tardeo, Bombay.

(5) Star Chemicals, 21, Noble Chambers, Parsee Bazaar Street, Bombay.

Delhi—

(6) D.C.M. Chemical Works, P.O. Box 211, Delhi.

APPENDIX III.

List of firms which submitted representations.

(1) Star Chemicals, 21, Noble Chambers, Parsee Bazaar Street, Fort, Bombay.

(2) Corn Products (India), Limited, Post Box 994, Bombay.

APPENDIX IV.

List of witnesses examined and the dates on which they were examined.

Name.	Date.
Manufacturers—	
(1) Mr. R. B. Shah, representing Star Chemicals, Bombay.	28th February 1946.
(2) Dr. L. A. Bhatt, representing Bombay Chemical Manufacturers' Association, Bombay.	Do.
Consumers—	
(1) Mr. R. B. Makhanwalla, representing Messrs. J. Curtis & Co., Ltd., Bombay.	1st March 1946.
(2) Mr. G. G. Agashe, representing The Brihan Maharashtra Sugar Syndicate, Ltd., Poona.	Do.
(3) Mr. R. Hyam, representing General Motors (India), Limited, Bombay.	Do.
(4) Messrs. B. Peltier and Sardesh Pande, representing Corn Products (India), Limited, Bombay.	Do.